

New Zealand No. 276741  
International No. PCT/GB94/02589

**TO BE ENTERED AFTER  
ACCEPTANCE AND PUBLICATION**

Priority dates: 24.11.1993;

Complete Specification Filed: 24.11.1994

Classification:(6) H04B3/56

Publication date: 28 July 1998

Journal No.: 1430

**NEW ZEALAND  
PATENTS ACT 1953  
COMPLETE SPECIFICATION**

**Title of Invention:**

Method and apparatus for signal coupling at medium voltage in a power line carrier communications system

**Name, address and nationality of  
applicant(s) as in international  
application form:**

REMOTE METERING SYSTEMS LTD., a British company of The Barn, Palace Gate,  
High Street, Odiham, Hants RG25 1JZ, United Kingdom

276741

## METHOD AND APPARATUS FOR SIGNAL COUPLING AT MEDIUM VOLTAGE IN A POWER LINE CARRIER COMMUNICATIONS SYSTEM

This invention is concerned generally with communication over electricity supply networks (sometimes termed PLC, Power Line Communication), and more particularly over underground networks operating at voltages above the final supply voltage to consumers.

### Mains distribution - general

In most major countries, electricity is supplied on a wide scale by electricity generating and distribution companies (electricity utilities). The distribution network normally consists of a large number of low voltage networks (often termed the mains) to which domestic and small business consumers are connected, with the low voltage networks being supplied through a higher voltage distribution network or system (often termed the grid). The low voltage (consumer) networks may for example operate at 230 V (or 440 V 3-phase).

The distribution network will normally operate at more than one voltage. There is long-distance distribution at voltages of say 132 kV or 275 kV, which we will term high voltages. These high voltages are stepped down (possibly through 2 or more stages) through transformer and switching stations (which we will term primary or high voltage stations) to voltages of say 11 kV or 33 kV, which we will term intermediate voltages. These are in turn stepped down through further transformer and switching stations (which we will term substations) to the final consumer mains voltage.

### Mains signalling - general

The use of the mains for signalling has often been proposed. Systems are available for intercommunication between rooms in domestic premises (typically for "baby alarms"), for coupling to the telephone system, and for transmission of data between computer units. Many proposals have also been made for the use of mains signalling for remote meter reading (primarily for electricity meters, though gas and other meters can be coupled to the mains for this purpose, preferably through electricity meters).